

Abstract

A system for pumping or mixing a fluid using a levitating, rotating magnetic bearing and various other components for use in a pumping or mixing system are disclosed. The magnetic bearing is placed in a fluid-containing vessel in close proximity to a superconducting element. A separate cooling source thermally linked to the superconducting element provides the necessary cooling to induce levitation in the magnetic bearing. The superconducting element may be thermally isolated, such that the bearing, the vessel, and any fluid contained therein are not exposed to the cold temperatures required to produce the desired superconductive effects and the resulting levitation. By using means external to the vessel to rotate and/or stabilize the magnetic bearing levitating in the fluid, including possibly rotating the superconducting element itself or moving it relative to the vessel, the desired effective pumping or mixing action may be provided.